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EXAMINER	
CHEN, TSE W	

ART UNIT	PAPER NUMBER
2116	

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/991,164	WEAST, JOHN C.	
	Examiner	Art Unit	
	Tse Chen	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39,41 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39,41 and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. It is hereby acknowledged that the following papers have been received and placed of record in the file: Amendment dated July 24, 2006.

2. Claims 1-39 and 41-42 are presented for examination.

Response to Amendment

3. The amendment filed July 24, 2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "one or more factors, including available physical memory space, user defined parameters, file size and the like, as may be determined by *various rules*..." The original disclosure did not indicate the particular rules used to determine the one or more factors.

Applicant is required to cancel the new matter in the reply to this Office Action.

Drawings

4. The drawings received on July 24, 2006 are not acceptable. Block 418A contains new subject matter regarding "determine trends or rule(s) regarding superset to read".

5. The drawings received on November 16, 2001 are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "user input requesting that the buffered write operations be committed to non-volatile storage", "deleting from physical memory a prior buffered write operation request that seeks to modify a same storage location on the device as the write operation to be buffered", "a processor communicatively coupled to the physical memory and the at least one non-volatile storage

device", "identifying the subset of the entire file to be read into memory is based on one or more file access trends", "if a limited power condition exists, the requested file portion is read from the device and returned to the requesting process before a remainder of the superset is read into memory", "if a superset of the requested file portion is read into memory, further comprising accessing the superset read into memory to fulfill a subsequent request from the process for a portion of the file", "if a superset of the requested portion of the requested portion is read into memory, deactivating the device", "translating the received read request for the file portion into a plurality of read requests that collectively cause the superset to be read from the device", "selectively storing the superset of the requested file portion into memory based on its relative priority" and "an application executing on the processor registers with the intermediate file system driver to indicate compliance with selective buffering techniques to be used in conjunction with the read/write policy" must be shown or the feature(s) canceled from the claim(s). **No new matter should be entered**.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claims 23, 29-30, 41-42 are objected to because of the following informalities:

- As per claim 23, "claim 11" should be "claim 22" as there is no corresponding "file type" established in claim 11.
- As per claims 29-30, "write operations" should be "write requests" [pg.7, 0015 of specification].
- As per claim 41, "claim 40" should be "claim 39".
- As per claim 42, "claim 38" should be "claim 39".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by McGrew et al., US Publication 20030003908, hereinafter McGrew.

9. McGrew discloses a method comprising:

- Receiving a request to perform a write operation to a file system device [104].
- Determining whether the file system device is activated or inactivated [0037; activated with power supply ramped up].
- If the file system device is determined to be activated, accessing the file system device to perform the requested write operation [0039].
- If the file system device is determined to be inactivated, buffering the write operation to physical memory [e.g., 108] [0037, 0039].

10. Claims 27-30 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Ryu, US Patent 5978921.

11. In re claim 27, Ryu discloses a machine-accessible medium embodying instructions [functions] for causing a machine to perform operations [col.4, ll.44-52] comprising:

- Determining a power state of a nonvolatile storage device [hdd] [table 1, 2].
- Selectively buffering a file system write request [inherent buffering prior to send and after receipt but prior to processing] relating to the nonvolatile storage device based on the determined power state of the nonvolatile storage device [col.4, ll.44-52].
- Determining whether the device is operating in a limited power state [battery voltage level] prior to determining whether the device is activated or inactivated [determined in order to write] [col.6, l.52 – col.7, l.5].

12. As to claim 28, Ryu discloses, wherein determining a power state of a device comprises determining whether the device is operating under battery power [col.4, ll.44-52; power system modes related to battery].

13. As to claim 29, Ryu discloses, comprising instructions for writing one or more buffered write operations to the device upon an occurrence of a predetermined condition [col.6, ll.63-66; battery voltage level equal to second reference voltage].

14. As to claim 30, Ryu discloses, comprising instructions for causing a machine to deactivate the device after writing the one or more buffered write operations [col.6, l.62 – col.7, l.5].

15. As to claim 38, Ryu discloses, wherein the predetermined condition comprises at least one condition selected from a group consisting of ... detecting that battery power has reached a specified threshold level... [col.6, ll.63-66; battery voltage level equal to second reference voltage]

16. Claims 31-32 and 35-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Morcom, US Patent 6647499.

17. In re claim 31, Morcom discloses a machine-accessible medium embodying instructions [110] for causing a machine to perform operations comprising:

- Determining a power state of a device [104] [col.4, l.58 – col.5, l.6; determine power on in order to operate].
- Based on the determined power state of the device and in response to a file system request to read a portion of the file [data] from the device, selectively reading a superset of the requested file portion from the device into physical memory [108], wherein the superset of the requested file portion is logically related to the requested portion [col.4, l.45 – col.5, l.6; e.g., fill 108 with entire file].

18. As to claim 32, Morcom discloses, wherein selectively reading a superset of the requested file portion into memory comprises reading the entire file into physical memory [col.4, l.58 – col.5, l.26; fill 108 with entire file].

19. As to claim 35, Morcom discloses, wherein the requested file portion is read from the device and returned to a requesting process [program] before a remainder of the superset is read into physical memory [col.5, ll.7-26; first data is returned before additional data is read].

20. As to claim 36, Morcom discloses, wherein, comprising accessing the superset read into physical memory to fulfill a subsequent file system request to read a portion of the file [col.5, ll.7-19].

21. As to claim 37, Morcom discloses, comprising instructions for causing a machine to deactivate the device after reading the superset of the requested file portion. [col.4, l.58 – col.5, l.6].

22. Claims 39 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Rao, US Patent 5812883.

23. In re claim 39, Rao discloses a system [fig.2] comprising:

- A processor [100] communicatively coupled to physical memory [222].
- A nonvolatile storage device [208] communicatively coupled to the processor, wherein access to the nonvolatile storage device is controlled by a file system driver [206] responsive to file system requests [col.4, ll.41-54].
- An intermediate file system driver [202] to receive user customized parameters [204] and to receive file system requests, the intermediate file system driver to provide read/write policy to the file system driver based on the user customized parameters, wherein the file

system requests are to be intercepted by the intermediate file system driver, wherein the file system driver accesses the nonvolatile storage device in accordance with the read/write policy, and wherein the read/write policy is to minimize at least one of unnecessary device access operations and unnecessary device activation-deactivation operations [col.5, ll.19-46; col.7, ll.6-48; col.9, l.13 – col.10, l.34; e.g., prolong period of inactivity to reduce unnecessary device activation-deactivation operations with the extreme being always on so unnecessary device activation-deactivation operations would be absolute minimum].

- Wherein the intermediate file system driver intercepts a file system write request and selectively buffers the write request to physical memory until a predetermined condition is detected, wherein responsive to the predetermined condition [passing error monitoring/correcting], the intermediate file system driver initiates performance of the write request of the buffered write request [col.5, ll.19-46].

24. As to claim 42, Rao discloses, wherein an application [windows] executing on the processor registers with the intermediate file system driver [via control panel] to indicate compliance with selective buffering techniques to be used in conjunction with the read/write policy [col.6, l.63 – col.7, l.5].

Claim Rejections - 35 USC § 103

25. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen et al., US Patent 6622252, hereinafter Klaasen, in view of Olds et al., US Patent 6826630, hereinafter Old.

26. In re claim 2, Klaasen discloses a method comprising [col.1, ll.40-57]:

- Receiving a request to perform a write operation to a device [disk drive].
- Determining whether the device is activated [spindle speed at normal velocity] or inactivated.
- If the device is determined to be activated, accessing the file system device to perform the requested write operation [writing when spindle speed activated accordingly].
- Determining whether the device is operating in a limited power state [power saving mode] prior to determining whether the device is activated or inactivated [spindle speed is increased until disk is activated at normal velocity].

27. Klaasen did not disclose explicitly buffering the write operation if the device is determined to be inactivated.

28. Old discloses a method comprising if a device [disc drive] is determined to be not favorable [inactivated], buffering the write operation to physical memory [col.1, ll.41-59; col.2, ll.7-19].

29. It would have been obvious to one of ordinary skill in the art, having the teachings of Klaasen and Old before him at the time the invention was made, to include the explicit teachings of the old well known buffering of write operations as explicitly taught by Old, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a very well known way to process write operations efficiently [Old: col.1, ll.10-27, col.2, ll.7-19; communications is buffered until typical disk drives such as Klaasen's is activated with the appropriate spindle speed for processing, freeing the cpu to continue processing other tasks instead of waiting for activation of the disk drive].

30. As to claim 3, Klaasen discloses, wherein the device comprises a disk drive, a non-volatile memory component, or a network access device [col.1, ll.40-57].

31. As to claim 4, Klaasen discloses, wherein determining whether the device is activated or inactivated comprises determining whether the device is powered-up or powered-down, respectively [col.1, ll.40-57; spindle velocity is related to power].

32. As to claim 5, Old discloses, wherein receiving a request to perform a write operation comprises using an intermediate file system driver [232] to intercept a request bound for a file system driver [202].

33. As to claim 6, Klaasen discloses, comprising writing one or more buffered write operations to the device upon an occurrence of a predetermined condition after activating the device if the device is determined to be inactivated [col.1, ll.40-57; normal spindle velocity; activated if inactivated as is well known in the art].

34. Claims 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen and Old as applied to claims 2 and 6 above, and further in view of Wong et al., US Publication 20030093645, hereinafter Wong.

35. Klaasen and Old disclose each and every limitation as discussed above. Klaasen and Old did not disclose explicitly other predetermined conditions.

36. Wong discloses a method comprising writing one or more buffered write operations to the device [disk] upon an occurrence of a predetermined condition, wherein the predetermined condition comprises one or more of the following: detecting that a memory write buffer [210] is full, detecting that a predetermined amount of time has lapsed, detecting that a predetermined volume of data has been buffered, detecting that battery power is at a threshold level, detecting

that a computer system with which the device is associated is being turned off or put in a standby state, and detecting an explicit request that the write buffer contents be committed to non-volatile storage [0045].

37. It would have been obvious to one of ordinary skill in the art, having the teachings of Wong, Klaasen and Old before him at the time the invention was made, to modify the method of Klaasen and Old to include the teachings of Wong, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to increase the efficiency of write operations to disk drives [Wong: 0044; e.g., accumulate to full before writing all at once].

38. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong, Klaasen and Old as applied to claim 7 above, and further in view of Barrett, US Patent 6711686.

39. Wong, Klaasen and Old disclose each and every limitation as discussed above. Wong, Klaasen and Old did not discuss a user input requesting that the buffered write operations be committed to non-volatile storage.

40. Barrett discloses a method comprising receiving user input [exit windows] requesting that the buffered write operations be committed to nonvolatile storage [disk] and detecting an input requesting the write buffer contents [disk cache] be committed to nonvolatile storage [col.1, l.62 – col.2, l.9].

41. It would have been obvious to one of ordinary skill in the art, having the teachings of Barrett, Wong, Klaasen and Old before him at the time the invention was made, to modify the method of Wong, Klaasen and Old to include the teachings of Barrett, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a

combination as it provides a way to avoid security breaches caused by file corruption [Barrett: col.1, l.62 – col.2, l.9].

42. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen and Old as applied to claim 2 above, and further in view of Borr, US Publication 20020019874.

43. Klaasen and Old disclose each and every limitation as discussed above. Klaasen and Old did not disclose explicitly determining whether the requested write operation corresponds to an entity registered to participate in the method of controlling device write operations.

44. Borr discloses a method comprising determining whether the requested write operation corresponds to an entity registered to participate in the method of controlling device write operations [0107; via access mode such as writable or read only].

45. It would have been obvious to one of ordinary skill in the art, having the teachings of Borr, Klaasen and Old before him at the time the invention was made, to include the explicit well known teachings of Borr, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to protect data integrity [Borr: 0008].

46. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen and Old as applied to claim 2 above, and further in view of Giovannetti, US Patent 5815648.

47. Klaasen and Old disclose each and every limitation as discussed above. Klaasen and Old did not disclose explicitly that buffering the write operation to physical memory comprises deleting from physical memory a prior buffered write operation request that seeks to modify a same storage location on the device as the write operation to be buffered.

48. Giovanetti discloses a method wherein buffering [write back] the write operation to physical memory comprises deleting [via overwriting or updating] from physical memory a prior buffered write operation request that seeks to modify a same storage location on the device as the write operation to be buffered [col.2, ll.2-4, ll.11-19].

49. It would have been obvious to one of ordinary skill in the art, having the teachings of Giovanetti, Klaasen and Old before him at the time the invention was made, to include the explicit well known teachings of Giovanetti, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides an efficient way to update data to a disk [Giovanetti: col.2, ll.11-19].

50. Claims 11-14, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klaasen in view of Morcom, US Patent 6647499.

51. In re claim 11, Klaassen discloses a method comprising:

- Receiving a request from a process to read a portion of a file from a device [col.1, ll.40-56].
- Determining whether a limited power condition [battery powered] exists [col.2, ll.32-40].
- If a limited power condition [external powered] is determined not to exist, accessing the device to read the requested file portion into memory [col.4, ll.17-24; read normally].

52. Klaassen did not disclose accessing the device to read a superset of the requested file portion into memory if a limited power condition is determined to exist.

53. Morcom discloses a method comprising:

- Receiving a request from a process to read a portion of a file from a device [104] [col.4, ll.45-52].

- If a limited power condition is determined to exist [battery powered], accessing the device to read a superset [read ahead] of the requested file portion into memory [108], wherein the superset of the requested file portion is logically related to the requested portion [col.4, ll.15-35; col.4, l.58 – col.5, l.26; data read additionally for subsequent check].

54. It would have been obvious to one of ordinary skill in the art, having the teachings of Klaasen and Morcom before him at the time the invention was made, to modify the method of Klassen to include the teachings of Morcom, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to prolong battery life [Morcom: col.1, ll.48-57].

55. As to claim 12, Morcom discloses, wherein reading a superset of the requested file portion into memory comprises reading the entire file into memory [col.4, l.58 – col.5, l.26; fill 108 with entire file].

56. As to claim 13, Morcom discloses, wherein reading a superset of the requested file portion into memory comprises reading a subset of the entire file into memory [col.4, l.58 – col.5, l.26; any set is a subset of itself].

57. As to claim 14, Morcom discloses, comprising identifying the subset of the entire file to be read into memory [col.4, ll.53-57].

58. As to claim 16, Morcom discloses, comprising returning the requested file portion to the requesting process [col.5, ll.7-19].

59. As to claim 17, Morcom discloses, wherein, if a limited power condition exists, the requested file portion is read from the device and returned to the requesting process before a

remainder of the superset is read into memory [col.5, ll.7-26; first data is returned before additional data is read].

60. As to claim 18, Morcom discloses, wherein, if a superset of the requested file portion is read into memory, further comprising accessing the superset read into memory to fulfill a subsequent request from the process for a portion of the file [col.5, ll.7-19].

61. As to claim 19, Morcom discloses, comprising, if a superset of the requested file portion is read into memory, deactivating the device. [col.4, l.58 – col.5, l.6].

62. As to claim 20, Morcom discloses, wherein the device comprises a disk drive or a network access device. [col.3, ll.36-45].

63. Claims 15, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klaassen and Morcom as applied to claims 11 and 14 above, and further in view of Hirofuji, US Publication 20020091902.

64. In re claim 15, Klaassen and Morcom disclose each and every limitation as discussed above. Klaassen and Morcom did not disclose identifying the subset of the entire file to be read into memory is based on one or more file access trends.

65. Hirofuji discloses a method wherein identifying the subset of the entire file to be read into memory is based on one or more file access trends [0063-64].

66. It would have been obvious to one of ordinary skill in the art, having the teachings of Hirofuji, Klaassen and Morcom before him at the time the invention was made, to modify the method of Klaassen and Morcom to include the teachings of Hirofuji, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to improve data access efficiency [Hirofuji: 0005-7].

67. As to claim 22, Hirofuji discloses, comprising determining whether the requested read operation corresponds to a file type [characteristic] registered to participate in the method of controlling device read operations [0063].

68. As to claim 23, Hirofuji discloses, wherein each of a plurality of file types has an associated priority and wherein the method further comprising selectively storing the superset of the requested file portion into memory based on its relative priority [0064].

69. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryu, US Patent 5978921, in view of Klaassen.

70. In re claim 24, Ryu discloses a system [fig.2] comprising:

- At least one nonvolatile storage device [232, peripheral device].
- A physical memory [272].
- A processor [276] communicatively couple to the physical memory and the at least one nonvolatile storage device, the processor to execute instructions to perform operations comprising:
- Determining whether a limited power condition [battery at second reference voltage] exists [col.6, ll.52-62].
- If a limited power condition is determined to exist, writing one or more buffered write operations from physical memory to the nonvolatile device before the nonvolatile device is deactivated [col.6, l.63 – col.7, l.5].

71. Ryu did not disclose explicitly a time out period for deactivating a nonvolatile storage device that provides access to data.

72. Klaassen discloses detecting that a time-out period [predetermined] is to expire for deactivating a nonvolatile storage device [disk drive] that provides access to data [col.1, ll.40-57].

73. It would have been obvious to one of ordinary skill in the art, having the teachings of Klaasen and Ryu before him at the time the invention was made, to include the explicit well known teachings of Klaasen, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a well known way to conserve power [Klaassen: col.1, ll.40-57].

74. As to claim 25, Ryu discloses, wherein the nonvolatile storage device that provides access to data comprises a disk drive [232, 300] or a network access device.

75. As to claim 26, Ryu discloses, wherein determining whether a limited power condition exists comprises determining whether a system associated with the device is operating under battery power [col.6, ll.52-62].

76. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klaassen and Morcom as applied to claim 11 above, and further in view of Morton et al., US Patent 6442647, hereinafter Morton.

77. Klaassen and Morcom disclose each and every limitation as discussed above. Klaassen and Morcom did not disclose reading the superset of the requested file portion into memory comprises translating the received read request for the file portion into a plurality of read requests that collectively cause the superset to be read from the device.

78. Morton discloses a method wherein reading the superset [data blocks] of the requested file portion [requested data blocks] into memory comprises translating the received read request

for the file portion into a plurality of read requests [commands] that collectively cause the superset to be read from the device [col.2, ll.40-63].

79. It would have been obvious to one of ordinary skill in the art, having the teachings of Morton, Klaassen and Morcom before him at the time the invention was made, to modify the method of Klaassen and Morcom to include the teachings of Morton, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to improve latency time for data transfers in a disk system [Morton: col.2, ll.40-63].

80. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morcom as applied to claim 31 above, and further in view of Kimura et al., US Patent 6415359, hereinafter Kimura.

81. Morcom discloses each and every limitation as discussed above. Morcom did not disclose explicitly that determining a power state of a device comprises determining whether the device is operating under battery power.

82. Kimura discloses determining a power state of a device comprises determining whether the device is operating under battery power [s1].

83. It would have been obvious to one of ordinary skill in the art, having the teachings of Kimura and Morcom before him at the time the invention was made, to include the explicit teachings of Kimura, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to extend battery life of a portable computer with a disk drive [Kimura: col.1, l.15 – col.2, l.36].

84. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morcom as applied to claim 31 above, and further in view of Morton.

85. Morcom discloses each and every limitation as discussed above. Morcom did not disclose that selectively reading a superset of the requested file portion from the device into physical memory comprises translating the file system request to read a portion of the file portion into a plurality of read requests that collectively cause the superset to be read from the device.

86. Morton discloses selectively reading a superset of the requested file portion from the device [disk] into physical memory [cache memory] comprises translating the file system request to read a portion [requested data blocks] of the file portion into a plurality of read requests [commands] that collectively cause the superset [data blocks] to be read from the device. [col.2, ll.40-63].

87. It would have been obvious to one of ordinary skill in the art, having the teachings of Morton and Morcom before him at the time the invention was made, to modify the method of Morcom to include the teachings of Morton, in order to obtain the claimed medium. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to improve latency time for data transfers in a disk system [Morton: col.2, ll.40-63].

88. It would have been obvious to one of ordinary skill in the art, having the teachings of Kimura and Morcom before him at the time the invention was made, to include the explicit teachings of Kimura, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides a way to extend battery life of a portable computer with a disk drive [Kimura: col.1, l.15 – col.2, l.36].

89. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rao as applied to claim 39 above, and further in view of Giovannetti.

90. Rao discloses each and every limitation as discussed above. Rao did not disclose explicitly a rule to delete an earlier write request from the buffer when a subsequent write request to a same storage location on the nonvolatile storage device is intercepted and buffered by the intermediate file system driver.

91. Giovanetti discloses a rule [write back] to delete [via overwriting or updating] an earlier write request from a buffer when a subsequent write request to a same storage location is received [col.2, ll.2-4, ll.11-19].

92. It would have been obvious to one of ordinary skill in the art, having the teachings of Giovanetti and Rao before him at the time the invention was made, to include the explicit well known teachings of Giovanetti, in order to obtain the claimed method. One of ordinary skill in the art would have been motivated to make such a combination as it provides an efficient way to update data to a disk [Giovanetti: col.2, ll.11-19].

Response to Arguments

93. All rejections of claim limitations as filed prior to Amendment dated July 24, 2006 not argued in entirety or substantively in response filed as said Amendment have been conceded by Applicant and the rejections are maintained from henceforth. Any arguments hereinafter related to said rejections of claim limitations will be considered untimely.

94. Applicant's arguments filed July 24, 2006 have been fully considered but they are not persuasive as the following details.

95. Applicant argues the following regarding the objection to the drawings:

- "user input requesting that the buffered write operations be committed to non-volatile storage" is inherent as a condition requiring device access. Examiner disagrees and submits that software input may be used instead of user input for requesting.
- "deleting from physical memory a prior buffered write operation request that seeks to modify a same storage location on the device as the write operation to be buffered" is inherent in the operation of the intermediate file system driver. Examiner disagrees and submits that the intermediate file system driver may overwrite the same storage location instead of deleting from physical memory the prior buffered write operation.
- "a processor communicatively coupled to the physical memory and the at least one non-volatile storage device" is shown inherently in fig.1. Examiner disagrees and submits that fig.1 does not show any processor.
- "translating the received read request for the file portion into a plurality of read requests that collectively cause the superset to be read from the device" is shown in fig.4 in 416 and 418. Examiner disagrees and submits that fig.4 does not shown any translating step.
- "an application executing on the processor registers with the intermediate file system driver to indicate compliance with selective buffering techniques to be used in conjunction with the read/write policy" is inherent in fig.1. Examiner disagrees and submits that fig.1 does not show any applications registering [i.e., a method step].

96. The features ***must*** be shown or the feature(s) canceled from the claim(s). **No new matter should be entered**. **The objection to the drawings will not be held in abeyance**.

97. Applicant argues that McGrew teaches "buffering always occurs before storing". Examiner agrees with Applicant's concession that McGrew does teach buffering before storing

which corresponds to limitation requiring buffering the data when the device is inactivated [i.e., buffer before the device can be activated to be stored].

98. Applicant argues that McGrew does not "solve the problem of optimizing power in a system by minimizing activation and deactivation of a file device". Examiner was not able to find the limitation of solving the problem of optimizing power in a system by minimizing activation and deactivation of a file device.

99. Applicant argues that Ryu does not "teach the step of determining the actual power state of the NV storage". Examiner agrees with Applicant's concession that Ryu does teach "that differing power states use differing amounts of power (table 1)" and submits that the actual power state of the NV storage must be determined in order to apply the appropriate power. Examiner notes that Applicant did not disclose any specific enabling means regarding "determining the actual power state of the NV storage" in the original disclosure.

100. Applicant argues that Ryu does not teach "selectively buffering a file system write request relating to the non-volatile storage device based on the determined power state of the non-volatile storage device". Examiner disagrees and submits that absent any limitations directed to any particular buffer, inherent buffering in the broadest interpretation of a write request is needed to determine the fulfillment of that request. Moreover, Examiner agrees with Applicant's concession that Ryu teaches the "automatically storing of data being used and to turn off the system in order to prevent the loss of data" as the concession shows that Ryu does disclose selectively buffering a file system write request based on the determined power state of the nv storage device [i.e., power saving state is disabled in s50 to buffer information to prevent the loss of data in another power state].

101. Applicant argues that Ryu teaches away from "buffering the data to prevent unnecessary activation of the storage device". Examiner did not find any explicit teachings in Ryu against buffering the data to prevent unnecessary activation of the storage device. Moreover, Examiner was not able to find the limitation of buffering the data to prevent unnecessary activation of the storage device.

102. Applicant argues that Ryu does not "determine whether the device is operating in a limited power state prior to determining whether the device is activated or inactivated". Examiner disagrees and submits that Ryu does disclose determining whether the device is operating in a limited power state [battery voltage level] prior to determining whether the device is activated or inactivated [determined in order to write] [col.6, l.52 – col.7, l.5].

103. Applicant argues that Ryu does not "determine whether the device is operating under battery power". Examiner disagrees and submits that Ryu is concerned with power consumption of a device operating under the limited power supply of a battery [col.4, ll.44-52; fig.7a]. Examiner notes that Applicant did not disclose any specific enabling means regarding "determine whether the device is operating under battery power" in the original disclosure.

104. Applicant argues that Ryu "fails to teach writing one or more buffered write operations to the non-volatile storage device upon an occurrence of a detected predetermined condition". Examiner disagrees and submits Applicant's concession that Ryu does teach "data is stored in a device when battery power is low to prevent loss of data" where the predetermined condition may be associated with "when battery power is low".

105. Applicant argues that Morcom teaches away from "selectively reading a superset... inherent in the limitation of selectively that a superset might not be read in some cases".

Examiner disagrees and submits that it is also inherent in the limitation of selectively that a superset be read in some cases.

106. Applicant argues that "*if* the cache is smaller than the file, then Morcom cannot copy the entire file". Examiner submits that Morcom did not place any restriction on the cache size and specifically indicated that 108 is to be filled with the entire file.

107. Applicant argues that Morcom does not teach "that the requested portion is returned to the requesting process before a remainder is read". Examiner disagrees and submits that Morcom does teach that the requested portion is returned to the requesting process before a remainder is read [col.5, ll.7-26; first data is returned before additional data is read].

108. Applicant argues that Rao does not teach "the read/write policy be provided to the file system driver by the intermediate file system driver based on user customized parameters". Examiner disagrees and submits that absent any limitations regarding the form of read/write policy, Rao does disclose the read/write policy be provided to the file system driver by the intermediate file system driver based on user customized parameters [col.5, ll.19-46; col.7, ll.6-48; col.9, l.13 – col.10, l.34].

109. Applicant argues that Rao does not teach "selectively buffering". Examiner agrees with Applicant's concession that Rao does teach "buffering disk writes to buffers" which corresponds to buffering the write request to physical memory until a predetermined condition is detected [passing error monitoring/correcting] [col.5, ll.19-46].

110. Applicant argues that "reason for registration" is misunderstood. Examiner submits a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed

invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

111. Applicant argues that Olds does not teach "buffering write operations to physical memory when the device is inactivated". Examiner disagrees and submits that Olds does teach buffering write operations to physical memory when the device is inactivated [unfavorable] [col.1, ll.41-59; col.2, ll.7-19].

112. Applicant argues that "a favorable condition could be that the battery power is at full level". Examiner submits that the favorable condition in the context of Olds pertains to the disc drive.

113. Applicant argues that Olds "teaches away from buffering, in order to reduce latencies". Examiner disagrees as there are no such teachings in Olds.

114. Applicant argues that "a device being powered up vs. being powered down is not the same as a spindle being at a different velocity". Examiner disagrees and submits that the spindle speed is related to power; hence, if the device is powered down, the spindle speed is down also. If Applicant is equating powered-down to powered-off, Examiner notes that Applicant did not disclose any specific enabling means regarding how the device would be re-activated [i.e., with all components off, the device would not be able to process any signals for activation] in the original disclosure.

115. Applicant argues that Klassen does not teach "writing one or more buffered write operations to the device upon an occurrence of a predetermined condition". Examiner disagrees and submits that normal spindle velocity can be considered to be a predetermined condition.

116. Applicant argues that Klassen teaches "away from buffering". Examiner disagrees as there are no such teachings in Klassen.

117. Applicant argues that Wong "teach caching data to a disk drive and not to physical memory". Examiner agrees with Applicant's concession that Wong does teach "objects ***cached*** by urlfs may be stored in ***memory*** and in a disk ***or*** in a disk only" and submits that memory can be considered to be physical memory.

118. Applicant argues that Wong is "improperly combined with the other references". Examiner disagrees and submits that increasing the efficiency of write operations to disk drives is proper motivation to combine with the other references involving storage devices.

119. Applicant argues that Barrett does not teach "caching to physical memory". Examiner disagrees and submits Applicant's concession that Barrett does teach "data stored in a disk cache" where a cache is considered to be physical memory.

120. Applicant argues that "registration is not a term that one of ordinary skill in the art would assume means that a flag is set in a file". Examiner disagrees and submits that to register means to record which would correspond to setting a flag [i.e., to record certain attribute].

121. Applicant argues that Klassen does not teach "determining whether a limited power condition exists". Examiner disagrees and submits Applicant's concession that Klassen does teach "the controller reduces speed *when* the storage device is powered by battery" where a limited condition is associated with a battery.

122. Applicant argues that "applying Morcom to Klaasen would increase the power consumption". Examiner submits that Applicant's mere conclusory statement has no supporting evidence.

123. Applicant argues that the claimed invention is not "intended to immediately power down the device regardless of the power state". Examiner was not able to find the limitation of not immediately powering down the device regardless of the power state. Examiner notes that not immediately powering down the device would not solve the problem of optimizing power in a system by minimizing activation and deactivation of a file device.

124. Applicant argues that a "subset" of a file cannot be the entire file, but is to be "a portion smaller than the entire file". Examiner was not able to find the explicit definition that stipulates a subset to be "a portion smaller than the entire file".

125. Applicant argues that Morcom "would return data retrieved from cache memory to the process and would preclude returning data retrieved form the device". Examiner submits that data retrieved from cache memory are data retrieved from the device.

126. Applicant argues that "Morcom does not teach an inherent determination that a superset of the requested portion has been read into memory". Examiner disagrees and submits Morcom discloses that if a superset of the requested file portion is read into memory, further comprising accessing the superset read into memory to fulfill a subsequent request from the process for a portion of the file [col.5, ll.7-19]. Examiner notes that Applicant did not disclose any specific enabling means regarding how the device would determine that a superset of the requested portion has been read into memory.

127. Applicant argues that it is "improper to combine the teaching of Morcom with Hirofuji as they teach incompatible methods" with support from mere conslusory statements such as "cannot select a portion of a file and also fill cache until it is full". Examiner submits that one can indeed fill a cache with portions of a file.

128. Applicant argues that Hirofuji does not teach "a superset of the requested file portion may be selectively stored based on a relative priority". Examiner disagrees and submits Applicant's concession that Hirofuji does disclose "data may be stored differently based on its access type" where random access data would have higher priority than sequential access data [in terms of storage amount].

129. Applicant argues that Morton does not teach "wherein the superset of the requested file portion is logically related to the requested portion". Examiner submits that Morton was not cited to teach wherein the superset of the requested file portion is logically related to the requested portion.

130. As such, Applicant's arguments are deemed not persuasive and the rejections are respectfully maintained.

Conclusion

131. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tse Chen whose telephone number is (571) 272-3672. The examiner can normally be reached on Monday - Friday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (571) 272-3670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tse Chen
September 5; 2006

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